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ABSTRACT

A workplace basic skills program was designed to complement technical training for mixing personnel at the Portland Bakery of Nabisco, Inc. Management, the union, and Portland Community College (Oregon) collaborated in the program. The company released workers on company time to attend classes prior to, during, and after the technical training component. Prior to the training, 65 employees from the mixing and assembly departments were assessed for reading and math computation competencies. A math training class was delivered during each 5-week technical training session. It addressed competencies in decimals and fractions. Individual Education Plans were developed for 16 employees who were diagnosed as having learning problems that made them at risk for successfully completing technical training. The program, called Skills Enhancement Training, was a support system before, during, and after technical training. Feedback from management, supervisors, and workers indicated the program was a success. (The 14-page report is followed by these appended materials: completed supervisor ratings of program effects on their departments and post-program participants, demographic summary of the math training class, and skills assessment instruments.) (YLB)

ED346262

THE COLUMBIA-WILLAMETTE SKILL BUILDERS CONSORTIUM

National Workplace Literacy Program (84.198)
U.S. Department of Education

FINAL PERFORMANCE REPORT

Submitted by
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APPENDIX V. Instructors' Reports and Sample Curriculum Materials

C. Portland Community College:

Nabisco, Inc.
Mary Smith

Individualized Skills Enhancement

U.S. DEPARTMENT OF EDUCATION
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SKILL BUILDERS
NABISCO,INC. FINAL REPORT

Nabisco, Inc., food processor of crackers and cookies, employs approximately 520 people in its Portland, Oregon Bakery. The Portland Bakery is rapidly undergoing technological and social changes. It is streamlining production by introducing sophisticated computerized processes throughout its plant. Simultaneously, Nabisco is undergoing social redesign with a team concept approach to production. Production line workers are taking on more and more responsibility formerly done by supervisors. In addition, the Bakers, Confectioners and Tabacco Union signed an historic participatory management agreement in March, 1990.

I. Initial contact and identification of need

Since the mixing department at Nabisco was the first phase of the Modernization project to be implemented, it was decided by management and the Portland Community College Director to target the mixing department employees for the grant. The PCC Project Director had previously visited Nabisco and had on going dialogues with management, supervisors, and workers.

II. Process of collaboration with company

My initial contact was with human resource manager, in July, 1990. At that time construction

was going on to accommodate eight new computerized mixers and equipment in the mixing department. Technical training for mixing personnel was targeted for December, 1990 or January, 1991 and start up for February. Plans were in a state of flux at Nabisco, so it was decided that I would return in September when things were more settled.

In September I met with human resource training manager, and we discussed "Old Skills vs. New Skills" for mixing personnel and attempted to identify them. Software programs were in the process of being developed and existing programs modified. I did a task analysis of old skills by observing and interviewing experienced workers on three separate shifts (day, swing, and graveyard). I spent a week watching workers assemble, weigh, and mix ingredients. I met with software engineers and subject matter experts. I watched the overview of the new processes on the computer and received copies of the computer screens. A manual had not been written yet, nor a contractor designated. I worked closely with the mixing supervisor who was designated to deliver the technical training component. I was allowed complete access to the mixing department production floor and had on going dialogues with foremen, supervisors, and workers. Since training was not going to take place until December or January for the first technical training group, I thought I had ample lead time. This, however, changed in

early September when the first group was re-scheduled for mid-October.

In order to design a workplace basic skills program to complement the technical training piece the training manager and I, along with the Mixing Modernization Committee (made up of one hourly employee from mixing, one supervisor from mixing and one hourly employee from environmental services) agreed upon an assessment of workers current skills versus the new skills they would need to effectively run the computerized equipment. I developed a customized reading and math assessment. A reading Cloze was developed from the draft overview of the mixing manual (9.2 reading grade level using Forecast Readability Formula). By October a writing contractor had been hired, and manual the was developed section by section. The math assessment consisted of basic skills computation (addition, subtraction, multiplication, division), fractions, decimals, conversions, and multi-step word problems simulating actual workplace applications. These were developed from the computer screens and reflected the math skills that directly related to their new job requirements. Recipes and measurements were now written in decimal form on the computer screens.

As the writers were developing the manual, I had input and collaborated with the training supervisor, subject matter experts, and lead writer. The manual was developed section by section as the training progressed and software

was developed and refined. Originally, some draft sections were written at the 11th. grade reading level or higher (using Forecast Readability Formula) but were changed to 9th.grade reading level which was agreed upon as a standard.

The proposed assessments were presented and received official endorsement through a formal plant wide Steering Committee. The membership consisted of management, hourly employees, and union representatives (a shop steward from the packing department and secretary-treasurer of the Local 364 of the BC&T). The Steering Committee was formed in early 1990 to help transition and address the future Social/Technical changes planned for the Portland Bakery.

After official approval, the proposed assessments and Technology Training Plan were presented to mixing personnel at an off- site meeting on a week-end. Since the mixing department was downsizing and only approximately 35 of the then 66 mixing department personnel would be trained, the proposed assessments were initially viewed with hostility. At this meeting, management and union leaders explained that the downsizing in the mixing department would be based on seniority as originally voted on by union members. It was explained by the plant manager that they would be attempting to tie the reduction in force with retirement. Low seniority at Nabisco is approximately 12 to 15 years. It was also explained to the workers after my initial introduction that the assessments would also be taken by

supervisors. It was explained by me that the purpose of the assessment was to help design a program for all workers in mixing to transition the new technological changes. Even if the workers did not end up in the mixing department, eventually as manual labor is eliminated, computerized equipment will be installed throughout the entire plant. Higher level skills in reading, math, and understanding processes and computer screens will be needed to operate the new equipment. It was also explained that eventually, plant wide, all employees will need to know how to learn again. The atmosphere was tense, and the workers were angry.

It was explained at this meeting by the Portland Community College Project Director, Nikki Sullivan, that Portland Community College had a confidentiality policy in which scores were only to be shared between the worker and the instructor. Consequently, employees viewed the assessments as a possible tool to eliminate them from the mixing department and technical training. Although the employees had been assured of assessment confidentiality, they still viewed it as a threat and management "ploy."

After the project director and I were introduced, the elected secretary of the BC&T, spoke and tried to calm employees' anger. This was the only introduction the project director and I had to union officials. We had originally requested meetings with union officials but had been discouraged by management. Since we

were operating in their corporate culture, we did not insist upon a separate meeting with union officials. This proved to be a mistake.

I cannot emphasize enough the importance of involving union leaders, shop stewards, and workers in the planning of any proposed assessments and/or basic skills program up front.

The assessments were scheduled by the mixing supervisor the following week and were given either individually, in small groups of three to four, and sometimes in groups of seven to eight. This also proved to be a mistake.

At union leaders' request, about a month after the assessments were administered, the project director, the program coordinator and I met with union officials in their off=site office.

The union perspective was that they had felt left out in the process and in the planning. We explained that we had asked to have a meeting with them early on, but we had been discouraged by management. In addition, the union officials voiced concern over any of the assessments being administered in small groups.

Again, it cannot be stressed enough the importance of having union leaders and representatives for support. After the union meeting, the Nabisco Workplace Skills Program became a complete success. Union support lent credibility to the program from the workers' point of view. In addition,

the program was viewed by the workers as a support and bridge to transition technical training rather than a management scheme for weeding out less effective employees. The union bought into the program as well as the rank and file workers. It became a collaborative effort among management, the workers, and Portland Community College. The company bought into the program by releasing workers on company time to attend classes prior to , during, and after the technical training component. Another issue which was resolved concerned assessments. The union and workers wanted any following assessments to be done on an individual basis. The training became a very positive experience for the employees.

III., IV., V.

Determination of curriculum content and development of curriculum: Assessment of learners

Sixty five employees from the mixing and assembly departments at Nabisco were assessed for reading and math computation competencies prior to entering technical training. A reading Cloze assessment customized from the mixing manual systems overview draft (9.2 reading grade level using the Forecast Readability Formula) gave a reading grade level score as Independent, Instructional, or Frustration level for each participant. The math assessment evaluated competencies in basic computation skills,

fractions, decimals, conversions, and applications of these skills in solving multi-step word problems.

From the assessment results, there was an overwhelming organizational training need for basic skills applications in reading decimals, fractions, converting fractions to decimals, and converting pounds and ounces to fractions and decimals. Through collaboration with the training manager, it was decided to deliver a math training class during each five week technical training session. Each technical training session included eight to ten employees and one supervisor. The class was named "Nabisco Math", and the strategic goals it addressed were competencies in fractions, decimals, conversions, rounding off, and comparing and contrasting decimals within specification ranges. Each worker was given a math book as a resource, and the curriculum was developed using recipes, process flow diagrams and problems from the computer screens. In addition, a 3 hour calculator training was included. The class ran for a week and varied within each technical training session from 12 to 15 hours. The first morning, 3 hours, was used to discuss how adults learn (tying new information to old information), learning styles, and study skills. Competencies included organization of the technical training manual, table of contents, index, cross references, bold face print, italized print, study method (SQ3R), organization of chapters, how to read process flow diagrams,

how to read 3 and 4 column charts and apply this information to locate malfunctions and solve problems. The manual was used as the curriculum and simulations were practiced on the computers in the engineering department.

Post tests similar to the initial math assessments were used to measure progress and competencies. Employees were allowed to use their calculators.

In addition, many individual learning problems were diagnosed which made some employees "at risk" for successfully completing technical training. For these employees who needed skill building in reading and math, Individual Education Plans were developed. The program was called Skills Enhancement Training, and it was a support system before, during, and after technical training. A room was designated for training, and I coordinated with the training supervisor and engineers to have access to the computers for simulation instruction in the the engineering department. Employees were released on company time.

After the assessments, employees needing Skills Enhancement Training were approached by me. The employees were released from work; however because of confidentiality requirements, they needed to arrange this with their shift supervisor. No one knew the content of the training. Some employees just needed brush up skills in math, some just increased reading skills, some just sections of technical

training they did not quite understand, and some needed long term training to remediate skill deficiencies.

Originally, (the first month of the program) employees were coming to Skills Enhancement Training on their own time without compensation. This proved to be a hit and miss situation. Once a policy was established, released paid work time, attendance was wonderful. Employees viewed the training as a support and commitment from management.

Sixteen (16) employees had Individual Education Plans and attended Skills Enhancement Training on company time. A month after the assessments were given about 30% of the work force was laid off. Because of layoffs, production schedules, and other employees attending technical training, the training was done on a 1-1 or 2-3 basis if production schedules allowed release of more than one worker on a shift. Some were short term and concentrated on brush up of math skills to bridge the technical training math class which concentrated on fractions, decimals, and conversions. Three employees were "at risk" for both reading and math skills, and they attended Skills Enhancement Training for eight months for two to three hours a week. In addition to attending Skills Enhancement Training which only used a functional context approach to reading, one employee had a tutor for five months for two hours a week and was released from work to attend.

The curriculum for the reading component of Skills Enhancement Training used the mixing manual, copies of computer screens, simulations and applications using the computer itself. Competencies involved reading process flow diagrams; matching numbers and symbols; reading 3 and 4 column charts; reading technical vocabulary; identifying abbreviations and acronyms, determining sequential steps to make or modify a recipe, identifying letters, codes, and numbers in Process Instrumentation Diagrams; reading messages on the computer; reading military time; identifying parts of a manual; cross referencing; bold face and italized print; locating information from tables and charts to solve problems in delivery of bulk ingredients from inventory bins to use bins; and reading, locating, and matching numbers to equipment in order to toggle motors and valves.

Progress was measured by successfully completing Technical Training and becoming certified as a Mixing Computer Operator. Math competencies were measured by post tests similar to the math assessment.

One employee who elected to attend the 5 week technical training session (this was based on seniority) in January, 1991 before successfully completing the competencies in Skills Enhancement Training did not become certified as a Mixer Computer Operator. He went back to Skills Enhancement

Training, completed the last Technical Training group in July,1991, and became certified as a mixer.

Between the math class and Skills Enhancement Training 48 employees had a 12 to 15 hour Study Skills/Math class. Of the 48 employees, 16 had Individual Education Plans.

V. Program Evaluation

Feedback from management, supervisors, and workers was that the program was a success. Once the policy of released time for workers was in place, the program was viewed as a bridge to technical training. This is proven by Nabisco's commitment to eventually assess every worker in their plant and provide training in basic skills to those employees who need or desire basic skills training. Toward the end of the grant period, I developed a customized math and reading assessment for the Bake Shop and Packing Department workers. Both departments will eventually switch to computerized equipment. Nabisco wants to continue the same Program Design, but the company wants every employee to attend a math class. The math class will be in modules of measurement, fractions, decimals, and conversions. This course will be paid by Nabisco. In addition, if the grant is re-negotiated, a communication skills class focusing on oral and written communication is being planned: How to Conduct a Meeting; Taking Notes at a Meeting; Writing Notes in Memo Form and Communicating Ideas Clearly.

VII. COMMENTS

Because of the dramatic workplace changes at Nabisco, negotiations took much longer than expected- approximately five months. This was most likely due to the fact that construction was going on, and management and software systems were being developed as training was occurring. Once the assessments were developed and administered, I attended the five week Technical Training class. This was eight hours a day for five weeks which added up to 200 hours. I was allotted 300 hours for curriculum development, so this was used very quickly. In addition, I observed workers on three shifts for approximately five hours for three days. I also viewed the software and met with subject matter experts for a week to understand the process. This is before any actual curriculum was developed. I also met with the writer consultant and had imput into the manual as it was being written. Consequently, curriculum development was an on-going process throughout the entire year. An estimation of time spent in curriculum development would be 650 hours. Actual instruction was 432 hours, since instruction did not begin until late November. The consortium model was a great resource for ideas and support. The Portland Community College Project Director, Nikki Sullivan, and Steve Reder from Northwest Regional Educational Laboratory were a source of support and strength. They were present at Nabisco meetings and positive mentors for some rather tense moments at the

beginning of the program. I would like, however, to have had more curriculum development training throughout the year. In conclusion, the Nabisco Skills Program had some tense moments in the beginning of the program, but it became a positive and exciting program that the workers, management and union want to continue.

SUPERVISORS' EVALUATION OF PROGRAM EFFECTS ON THEIR DEPARTMENTS

Supervisor's Name : _____

Today's Date: June 28, 1994

- How many employees in your department participated in the program? ____
- In your opinion, now that the initial course has been completed, how would you rate its effects on this participant that you supervise? Circle the number that shows how you feel.

PRODUCTION:

5	4	3	2	1
Greatly increased	Somewhat increased	Stayed the same	Somewhat decreased	Greatly decreased

QUALITY:

5	4	3	2	1
Greatly improved	Somewhat improved	Stayed the same	A few more errors	Many more errors

FUTURE PLANS:

After completing the program, when new technical equipment or training comes to your department, do you think your employees will be able to handle it

Better The same Worse

Of the employees in your department who participated in the program, how much team-building do you notice as a result (that is, greater cooperation or problem solving among your employees?

5	4	3	2	1
A lot	Some	Same amount as before program	Little	None

Since your employees participated in the program, do you feel that your job as a supervisor has become:

5	4	3	2	1
Much easier	Somewhat easier	Same as before	Somewhat more difficult	Much more difficult

Please give an example: They can confidently convert ingredients to decimal figures, cut ingredients in 1/2 for recipes and understand proces

- If your company plans to continue to have employees participate in similar programs in the future, what would you recommend to improve the way the program is run?

_____

- Based on the effect that the program has had on the employees from your department who participated, would you recommend additional employees to the program? _____
  Why or why not? _____

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Supervisor's Signature

Today's Date

SUPERVISOR RATING OF POST-PROGRAM PARTICIPANTS

Name of employee you are rating:

Badge # of employee you are rating

In your opinion, now that the initial course has been completed, how would you rate its effects on this participant that you supervise? Circle the number that shows how you feel.

JOB ATTITUDE:

5	(4)	3	2	1
Greatly improved	Somewhat improved	The same	Somewhat worse	Much worse

Please give an example: doesn't ask supervisors as many questions

QUANTITY OF WORK:

(Program hours missed not included)

5	(4)	3	2	1
Increased above 100%	Increased some	Stayed the same	Decreased some	Decreased a lot

QUALITY OF WORK:

5	(4)	3	2	1
Very high accuracy	High accuracy	Meets requirements	Some errors	Many errors

ATTENDANCE:

(Other than Program hours)

(5)	4	3	2	1
Greatly improved	Somewhat improved	Stayed the same	Somewhat worse	Much worse

JOB KNOWLEDGE:

5	(4)	3	2	1
Works independently	Needs less supervision than before	Stayed the same	Needs more supervision than before	Needs constant supervision

- Has the employee asked about other job positions or announcements since the program? ____ If yes, what? _____
- With all other things being equal, on the next status report would you recommend a pay increase for this employee after the program? _____
- With all other things being equal, would you recommend this employee for a company job advancement after the program? _____

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Supervisor's Signature

6/28/91

Today's Date

SUPERVISOR RATING OF POST-PROGRAM PARTICIPANTS

Name of employee you are rating: _____ # _____ Badge # of employee you are rating

In your opinion, now that the initial course has been completed, how would you rate its effects on this participant that you supervise? Circle the number that shows how you feel.

JOB ATTITUDE:

5	4	3	2	1
Greatly improved	Somewhat improved	The same	Somewhat worse	Much worse

Please give an example: More confident; knows how to use calculator

QUANTITY OF WORK:

(Program hours missed not included)

5	4	3	2	1
Increased above 100%	Increased some	Stayed the same	Decreased some	Decreased a lot

QUALITY OF WORK:

5	4	3	2	1
Very high accuracy	High accuracy	Meets requirements	Some errors	Many errors

ATTENDANCE:

(Other than Program hours)

5	4	3	2	1
Greatly improved	Somewhat improved	Stayed the same	Somewhat worse	Much worse

JOB KNOWLEDGE:

5	4	3	2	1
Works independently	Needs less supervision than before	Stayed the same	Needs more supervision than before	Needs constant supervision

- Has the employee asked about other job positions or announcements since the program? ____ If yes, what? _____
- With all other things being equal, on the next status report would you recommend a pay increase for this employee after the program? _____
- With all other things being equal, would you recommend this employee for a company job advancement after the program? _____

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Supervisor's Signature

6/28/91
Today's Date

SUPERVISOR RATING OF POST-PROGRAM PARTICIPANTS

Name of employee you are rating: _____ # _____ Badge # of employee you are rating

In your opinion, now that the initial course has been completed, how would you rate its effects on this participant that you supervise? Circle the number that shows how you feel.

JOB ATTITUDE:

(5)	4	3	2	1
Greatly improved	Somewhat improved	The same	Somewhat worse	Much worse

Please give an example: helps other employees and math class

QUANTITY OF WORK:
(Program hours missed not included)

5	(4)	3	2	1
Increased above 100%	Increased some	Stayed the same	Decreased some	Decreased a lot

QUALITY OF WORK:

5	(4)	3	2	1
Very high accuracy	High accuracy	Meets requirements	Some errors	Many errors

ATTENDANCE:
(Other than Program hours)

(5)	4	3	2	1
Greatly improved	Somewhat improved	Stayed the same	Somewhat worse	Much worse

JOB KNOWLEDGE:

(5)	4	3	2	1
Works independently helps others	Needs less supervision than before	Stayed the same	Needs more supervision than before	Needs constant supervision

- Has the employee asked about other job positions or announcements since the program? ____ If yes, what? _____
- With all other things being equal, on the next status report would you recommend a pay increase for this employee after the program? _____
- With all other things being equal, would you recommend this employee for a company job advancement after the program? _____

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Supervisor's Signature

Today's Date

SUPERVISOR RATING OF POST-PROGRAM PARTICIPANTS

Name of employee you are rating:

1573
Badge # of employee you are rating

In your opinion, now that the initial course has been completed, how would you rate its effects on this participant that you supervise? Circle the number that shows how you feel.

JOB ATTITUDE:

5	(4)	3	2	1
Greatly improved	Somewhat improved	The same	Somewhat worse	Much worse

Please give an example: interacts with others - before a loner

QUANTITY OF WORK:
(Program hours missed not included)

5	(4)	3	2	1
Increased above 100%	Increased some	Stayed the same	Decreased some	Decreased a lot

QUALITY OF WORK:

5	(4)	3	2	1
Very high accuracy	High accuracy	Meets requirements	Some errors	Many errors

ATTENDANCE:
(Other than Program hours)

5	(4)	3	2	1
Greatly improved	Somewhat improved	Stayed the same	Somewhat worse	Much worse

JOB KNOWLEDGE:

5	(4)	3	2	1
Works independently	Needs less supervision than before	Stayed the same	Needs more supervision than before	Needs constant supervision

- Has the employee asked about other job positions or announcements since the program? ____ If yes, what? _____
- With all other things being equal, on the next status report would you recommend a pay increase for this employee after the program? _____
- With all other things being equal, would you recommend this employee for a company job advancement after the program? _____

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Supervisor's Signature

10/27/91
Today's Date

SUPERVISOR RATING OF POST-PROGRAM PARTICIPANTS

Name of employee you are rating:

#
Badge # of employee you are rating

In your opinion, now that the initial course has been completed, how would you rate its effects on this participant that you supervise? Circle the number that shows how you feel.

JOB ATTITUDE:

5	(4)	3	2	1
Greatly improved	Somewhat improved	The same	Somewhat worse	Much worse

Please give an example: Knows math skills

QUANTITY OF WORK:

(Program hours missed not included)

5	(4)	3	2	1
Increased above 100%	Increased some	Stayed the same	Decreased some	Decreased a lot

QUALITY OF WORK:

5	(4)	3	2	1
Very high accuracy	High accuracy	Meets requirements	Some errors	Many errors

ATTENDANCE:

(Other than Program hours)

5	(4)	3	2	1
Greatly improved	Somewhat improved	Stayed the same	Somewhat worse	Much worse

JOB KNOWLEDGE:

(5)	4	3	2	1
Works independently	Needs less supervision than before	Stayed the same	Needs more supervision than before	Needs constant supervision

- Has the employee asked about other job positions or announcements since the program? ____
  If yes, what? _____
- With all other things being equal, on the next status report would you recommend a pay increase for this employee after the program? _____
- With all other things being equal, would you recommend this employee for a company job advancement after the program? _____

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Demographic Summary

Course Title: Math Training Class + Lab
Company/Site: Nabisco

1. Age Distribution

18 or younger: 0 19 to 25 yrs.: 0 26 to 36: 2 36 to 50: 32 51 to 65: 8 65 or older: 0

2. Ethnic/Race Groups

White: 34 Black: 5 Indian: 0 Hispanic: 2 Other: 0 No Data: 1

3. Gender Male 30 Female 12

4. Years in Present Position

Less than 1 yr: 0 1 to 2 yrs: 0 3 to 5 yrs: 2 6 to 10 yrs: 18 Over 10 yrs: 21

5. Tenure (years with company)

Less than 1 yr: 0 1 to 2 yrs: 0 3 to 5 yrs: 0 6 to 10 yrs: 5 Over 10 yrs: 37

6. School Completion

Below grade 8: 2 8: 1 9: 5 10: 8 11: 2 12: 24 GED: 0 Some College: 4 No Data: 0

Degrees Yes__ No__ AA:__ BS/BA:__ MS/MA__

7. Previous Adult Education

2 :Continuing Education Classes
1 :College Classes (less than 1 yr)

8. Attendance

12 hours Math Training Class: 42

9 hours Lab: 1
12 hours Lab: 4
18 hours Lab: 3
21 hours Lab: 2
28 hours Lab 1
52 hours Lab 1
72 hours Lab 1

Compilation of Learner Data Mary Smith sent to Jane Phillips last fall (Nov 1991).

CURRENT MIXING SKILLS

1 - Reading/Comprehension

2 - Writing/Recording

3 - Sequential Operation

4 - Basic Math Computation

5 - Physical Labor

FUTURE SKILLS IN MIXING

1 - Read and Comprehend Training Material

2 - Read and Comprehend Computer Symbols

3 - Electronic Scale Usage

4 - More Complex Math Skills

5 - Emphasis on Intellectual Skills rather than Physical

NABISCO CLOZE EXERCISE

A CLOZE is an exercise in which words have been removed from a passage . Your ability to replace the words helps us match the suitability or fit of training materials. Your ability to replace the words aids us in assessing your reading comprehension. The CLOZE is scored differently from other reading assessments. A score of 50% is like 95% on other reading exercises. The results determine the suitability of material at an independent level, instructional level (with the help of an instructor), and frustrational level. Most people get less than half the answers correct. First, read through the passage. I will read the correct sample answers for you to check your understanding of how Cloze exercises work.

SAMPLE :

As a food processor, Nabisco is obligated to furnish our customers with safe, wholesome products. To accomplish this, it _____ (1) necessary that conditions in our _____ (2) be such that ingredients do not become contaminated with foreign substances or _____ (3) bacteria and do not present a _____ (4) to health. The attainment of this standard requires the effort of all _____ (5).

OVERVIEW

Before 1990, recipe ingredients were weighed and delivered to mixers in the Portland Nabisco Bakery using methods that dated back to the late 1940's. The Mixing Modernization Project, to be completed in July, 1991, brought computer control to the bakery's Mixing Department.

The most visible parts _____ the project involved new _____ and equipment, additions and_____ to the structure of the _____ building and the six-story tower, and new _____terminals throughout the unloading delivery and _____ areas. At the business end _____the changes, _ _____ installed eight new high-speed, high capacity Vicars batch mixers on _____ third floor of the bakery. The new mixers _____ a design that _____ and shear mixing doughs quickly.

CHANGES PERMIT COMPUTER CONTROL

The other changes in the _____ department, especially the changes in the tower, were made to _____ adequate inventories of the most common _____ used in Nabisco recipes. More importantly, they _____ made to permit computer control of the _____ process.

In the tower, where many of the _____ for the products made by the- _____ are stored, the company added a _____ ----- a mezzanine between the third and fourth floors --- to hold _____ for the bulk _____ ingredients(flour and sugar) needed in Nabisco _____ Each new bin,known as a _____bin, feeds ingredients to two new _ . _. Each use bin is filled as needed from one of 16 large inventory bins inside the bakery's tower, or from three outdoor inventory silos.

NABISCO SKILLS ASSESSMENT

NAME _____ DATE _____

1.
$$\begin{array}{r} 28 \\ 59 \\ 67 \\ 74 \\ +\ 13 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 3{,}062 \\ -\ 2{,}973 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 43 \\ \times\ 3 \\ \hline \end{array}$$

4.
$$\begin{array}{r} 806 \\ \times\ 85 \\ \hline \end{array}$$

5. $9 \div 3$

6. $3 \div 12$

7. Compare the following pairs of decimals and circle the larger decimal in each pair.

.7 or .73 .88 or .0885 .6 or .604

8. Convert the following fractions into their decimal equivalents.

3/5 = 3/4= 5/8=

9. Convert the following decimals to fractions.

.625 = .500 =

10. If you convert .625 to ounces, is it 6ounces or 10 ounces?

BAKING EQUIPMENT DESCRIPTION

BURNERS

Three different types of burners have been used in the Portland Bakery. All burners will be _____, as time permits, to _____ ribbon burners. A single _____ burner has only one _____ of flame.

OVEN BANDS

1. Solid:

   A solid steel band _____ used primarily in the _____ of soft varieties.

2. Perforated Steel:

   _____ in the band are _____ 1/16 " in diameter. This _____ of band is used _____ base cake production as _____ perforations help to control _____ hold uniform the finished _____ of the cake.

3. Wire Mesh:

   _____ consists of a series of _____ connected wires made in _____ herringbone pattern. The wire _____ bands are thicker than _____ other types and are _____ primarily in the production of crackers.

SAFETY DEVICES

On the top of each oven there are several exposion doors. In case of a _____ explosion in the oven, _____ doors will open relieving _____ pressure before damage is _____ to the oven itself. _____ inspection and clean out _____ are equipped with safety _____ which serve the same purpose.

Each oven is equipped with a Maxon valve mounted on the main gas supply line. This is a mercury switch-activated valve which will shut off the supply of gas at this point should there be a loss of ignition or gas pressure. Manual valve is located before the Maxon valve. You shut off the Manual Valve first in an emergency shutdown.

NABISCO BAKE SHOP SKILLS ASSESMENT

1. You are making Chips' Ahoy. The following weight samples were taken from Rows 1-14.

Rows 1-3	44.2	grams
Rows 4-7	43.4	grams
Rows 8-12	45.1	grams
Rows 13-14	44.1	grams

A. What is the total weight for all the samples?

B. What is the Average (Mean) of the samples?

2. The UCL and LCL CPP for Chips' Ahoy is 41-46. For the LCL each cookie weighs 44.2 grams. For the UCL each cookie weighs 43.2 grams. Which cookie will be lighter, 41 CPP or 46 CPP?

3. If the time bake of Oreos is 4 minutes 20 seconds, what does the Oven Speed Clock read? a) 4:25, b) 4:40, c) 4:35

4. If the time bake is 4 minutes 12 seconds, the Oven Speed Clock will read: a) 4:16, b) 4:20, c) 4:25.

5. You are measuring the Spring for Chips' Ahoy with your caliper. The specifications on the Baking Report are 3-1/8" to 4-3/8". Your spring measures 4-13/32". Is this within the specifications? If not, by how much is it out of specifications?

6. The Spring specifications for Oreos are 2-3/4" to 3". Your spring measures 2-24/32". Is this within the specifications? If not, by how much is out of specifications?

7. The Spring specifications for Chicken IN A Biscuit are 10 pieces measuring 1-3/4" + or - 1/8". Your 10 pieces measure 1-20/32" on your caliper or 1-5/8". Is this within the specifications? If not, by how much is it out of specs.?

8. You are making Wheat Thins. The machine is set at 65 CPM and the Oven Speed is 4:50. You need to speed up a minute. What will the Oven Speed clock read?

9. What effect does a light CPP have on a carton fill?

10. If a Sample is TOO Thick/SMALL, you should: a) increase temperature in first three zones; b) decrease temperature in first three zones; c) Speed up the band; d) call packing.

11. Round off the following decimals to the nearest hundredth:
13.625= ; 14.744 = ; 1.753=

1. Where would I look if I wanted to know what Use Bins are fed by System A?

2. My supervisor told me to deliver 500 pounds of climax from Inventory Bin 2 to User Bin 8 in the manual mode? Where do I look?

3. Where do I find information or how to deliver 400 pounds of sugar in the semi-auto mode? Can I do this?

4. Where do I look to find what mixers are fed by system C Use Bin?

5. I had a message on the display screen to put Use Bin 14 on operator hold. Where do I look to find out how to do it?

GROUP TRAINING MATH CLASS

OBJECTIVES :

1.1. To improve job-related computational skills as they relate to immediate job requirements (new technology).

1.2. To improve overall job performance.

1.3. To enhance participants' chances of job stability and upward job mobility through improved computation skills.

1.4. To increase company productivity through improving individual computational capabilities.

PROCEDURES:

2.1. Read and write common fractions.

2.2. Add, subtract, multiply and divide fractions.

2.3. Solve problems with common fractions.

2.4. Read and write decimals in one or more places.

2.5. Round off decimals in one or more places.

2.6. Add and subtract decimals in one or more places.

2.7. Multiply and divide decimals in one or more places.

2.8. Solve problems with decimals in one or more places.

2.9. Convert fractions to decimals, mixed numbers to decimal fractions.

2.10. Convert pounds and ounces to fractions, decimals and decimal fractions.

2.11. Convert CWT decimals to pounds.

2.12. Use calculator to solve problems by selecting and using correct order of operations.

2,13. Use calculator to perform basic arithmetic operations to solve problems.

2.14. Compare/Contrast decimals within range.

MATERIALS:

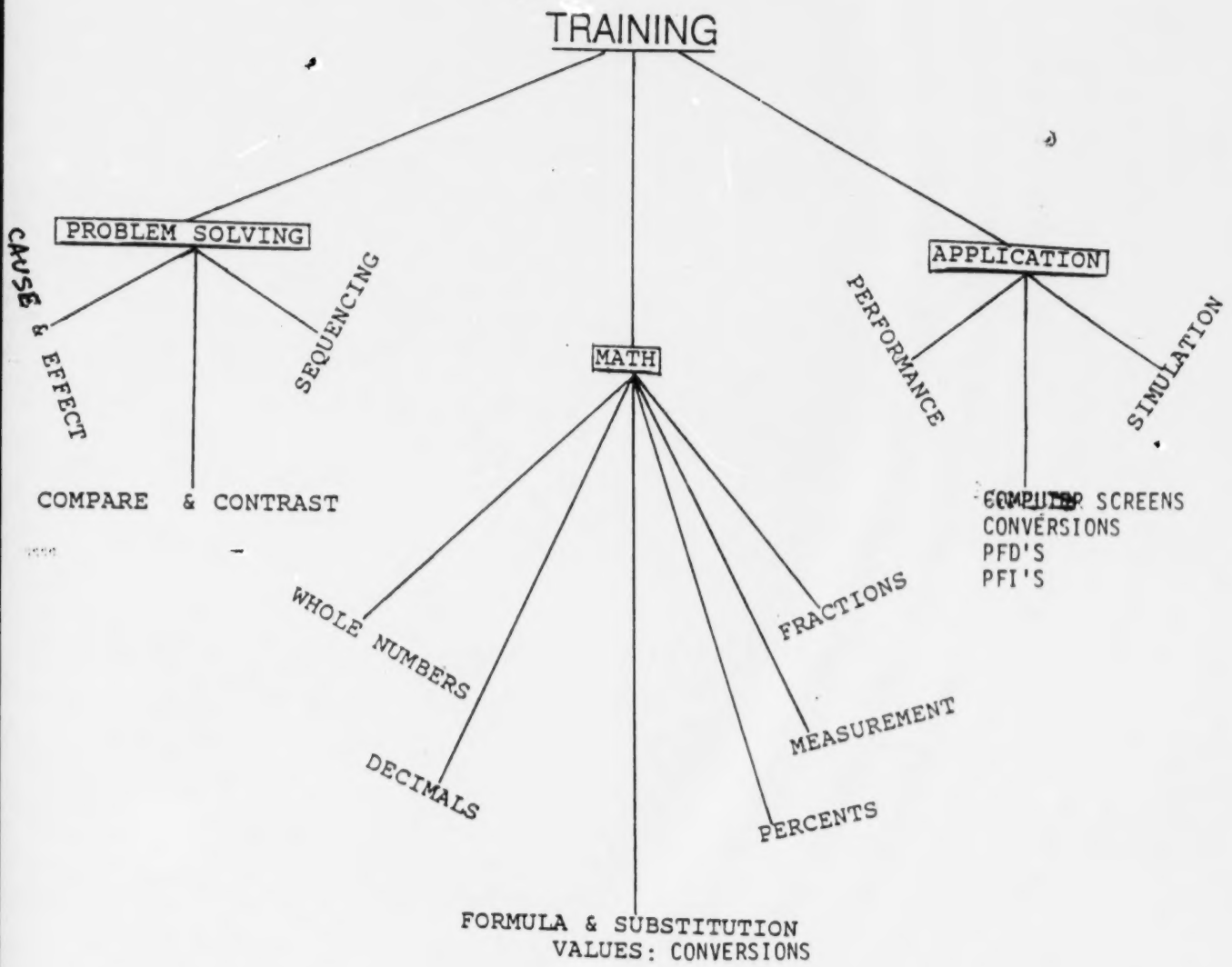
Calculate pp. 1-56.

The World of Adult Math

Nabisco Math Conversion Worksheets (Job Aids)

JOB SKILL ENHANCEMENT TRAINING

TRAINING DIAGRAM



Post Test

NABISCO SKILLS ASSESSMENT

NAME: _____ DATE: _____

1.
$$\begin{array}{r} 28 \\ 59 \\ 67 \\ 74 \\ +\ 13 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 3{,}062 \\ -\ 2{,}973 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 43 \\ \times\ 3 \\ \hline \end{array}$$

4.
$$\begin{array}{r} 806 \\ \times\ 85 \\ \hline \end{array}$$

5. 9 : 3

6. 3 : 12

7. Compare the following pairs of decimals and circle the larger decimal in each pair.

.7 or .73 .88 or .0885 .6 or .604

8. Convert the following fractions to their decimal equivalents:

3/5 = 3/4 = 5/8 =

9. Convert the following decimals to fractions:

.625 = .500 =

10. If you convert .625 to ounces, is it 6 ounces or 10 ounces.

11. You are making a 1/2 of a recipe of Chips Ahoy! A full batch needs 1 1/2 lbs. of vanilla. How many ounces does 1/2 batch need?

12. Can 26 1/2 lbs. be written as .265 or 26.50?

13. The menu on the computer screen calls for 20.5 lbs. of salt. The salt comes in 5 lb. bags. How many bags will you need?

14. The red pepper for Cheese Nips weighs 8 ounces. It is packaged and labeled .500. Today, however, it is written as .5; should it be written as .005 or .5?

15. The difference between the dough weight mixed and the dough weight ran was 32 lbs. The range is 1-20 lbs. Is this within the range?

16. You are making a batch on Honey Teddy Grahams. You are in the semi-automatic mode. The recipe on the CRT calls for 1.25 lbs. of lecithin. The supervisor, however, tells you to add 4 more ounces. After you add the 4 ounces, what will the number read under the Actual Column? _____
If the high is 1.60 and the low 1.20, is adding the 4 ounces within the range?

17. If the target for climax in a batch of Premiums is 178.8 and the computer shows the Actual as 171.9, how much more flour is needed?

1. Add the following decimals:

   500.75 + .0573 + 31.64 + .625

2. Write the following decimals:

   a. Six and three tenths

   b. Two hundred and fifty-two hundredths

   c. Twelve thousands

   d. Six hundred and twenty-five thousands

3. If climax is written as 3.6167 in CWT, what is it in pounds?

4. How is 1 13/16 written on the computer screen? Round off your answer to the nearest thousandths.

5. Tomorrow you need to make 46 Premiums Doughs and 15 Better Cheddar. You need 6 lbs. of buffer dough for each Premiums and 10 lbs. of buffer dough for Better Cheddar. How much buffer dough is needed? If you take 50 lbs. from each sponge, how many buffer doughs will you need?

Bake Shop

OBJECTIVES

1. To improve job-related computational skills as they relate to immediate job requirements.
2. To improve overall job performance.
3. To increase company productivity through improving individual computational capabilities.

MODULES

I. FRACTIONS

1. Read and write common fractions
2. Add and subtract common fractions
3. Multiply and divide common fractions
4. Compare and convert equivalent fractions. e.g. 1/2=8/16=16/32
5. Compare fractions within a range.

II. DECIMALS

1. Read and write decimals in one or more places.
2. Round off decimals in one or more places.
3. Add and subtract decimals in one or more places.
4. Multiply and divide decimals in one or more places.
5. compare/contrast decimals in one or more places.
6. Convert fractions to decimals.
7. Convert minutes and seconds to minutes .

III. MEASUREMENT

1. Read and measure accurately with calipers.
2. Record measurements and obtain averages and ranges.
   e.g. arrange weights from lightest to heaviest .
3. Perform metric conversion .
4. Record measurements accurately in correct location and format on a form.
5. Use a calculator to perform basic arithmetic operations to solve problems.
6. Determine if solution or measurement figures are reasonable.

Changing Ounces to Fractions and Decimals

Decimals

To change ounces to fractions and decimals, write the ounces as a fraction and then divide the bottom number (denominator) into the top number (numerator). To do this, add a decimal point and zeros to the top number. Usually two zeros are enough. Bring the point up into the answer.

Example: Change 4 ounces to a decimal.

Step 1. Write 4 ounces as a fraction.

$$\frac{4}{16}$$

Step 2. Reduce $\frac{4}{16}$ to lowest terms

$$\frac{4}{16} \; \frac{(4)}{(4)} \; \frac{1}{4}$$

Step 3. Divide bottom number (2) into the top number (1)

$$4 \overline{)\,1}$$

Step 4. Add a decimal point and zeros. Divide and bring the point up.

$$4 \overline{)\,1.00} \quad .25 = .25$$

$$\begin{array}{r} -\,8 \\ \hline 20 \\ -\,20 \\ \hline 0 \end{array}$$

Example 2: Change 6 ounces to a decimal.

Step 1. Write 6 ounces as a fraction.

$$\frac{6}{16}$$

Step 2. Reduce $\frac{6}{16}$ to lowest terms

$$\frac{6}{16} \; \frac{(2)}{(2)} \; \frac{3}{8}$$

Step 3. Divide bottom number (2) into the top number (1)

$$8 \overline{)\,3}$$

Step 4. Add a decimal point and zeros. Divide and bring the point up.

$$8 \overline{)\,3.000} \quad .375 \quad = .25$$

$$\begin{array}{r} -24 \\ \hline 60 \\ -56 \\ \hline 40 \\ -40 \\ \hline 0 \end{array}$$

Change the following ounces to fractions or decimals:

Ounce	Fraction	Decimal
1 ounce		
2 ounces		
3 ounces		
4 ounces		
5 ounces		
6 ounces		
7 ounces		
8 ounces		
9 ounces		
10 ounces		
11 ounces		
12 ounces		
13 ounces		
14 ounces		
15 ounces		
16 ounces		

Change the following ounces to fractions or decimals:

Ounce	Fraction	Decimal
1 ounce	1/16	.0625
2 ounces	2/16 = 1/8	
3 ounces	3/16	
4 ounces		
5 ounces	5/16	.3125
6 ounces	6/16	
7 ounces	7/16	.4375
8 ounces	8/16	
9 ounces	9/16	.5625
10 ounces	10/16	
11 ounces	11/16	.6875
12 ounces	12/16 = 3/4	
13 ounces	13/16	.8125
14 ounces	14/16	
15 ounces	15/16	.9375
16 ounces	16/16 = 1	1

Changing pounds and ounces to CWT

To change pounds and ounces to CWT, you move the decimal point two places to the left:

Example 1: Convert 231.7 pounds to CWT

231.7 : 100 = 2.3 1.7 = 2.317

Example 2: Convert 60,000 pounds to CWT

60,000 : 100 = 60,0.0 0. = 600 CWT

Example 3: Convert 800.1 pounds to CWT

800.1 : 100 = 8.0 0.1 = 8.001 CWT

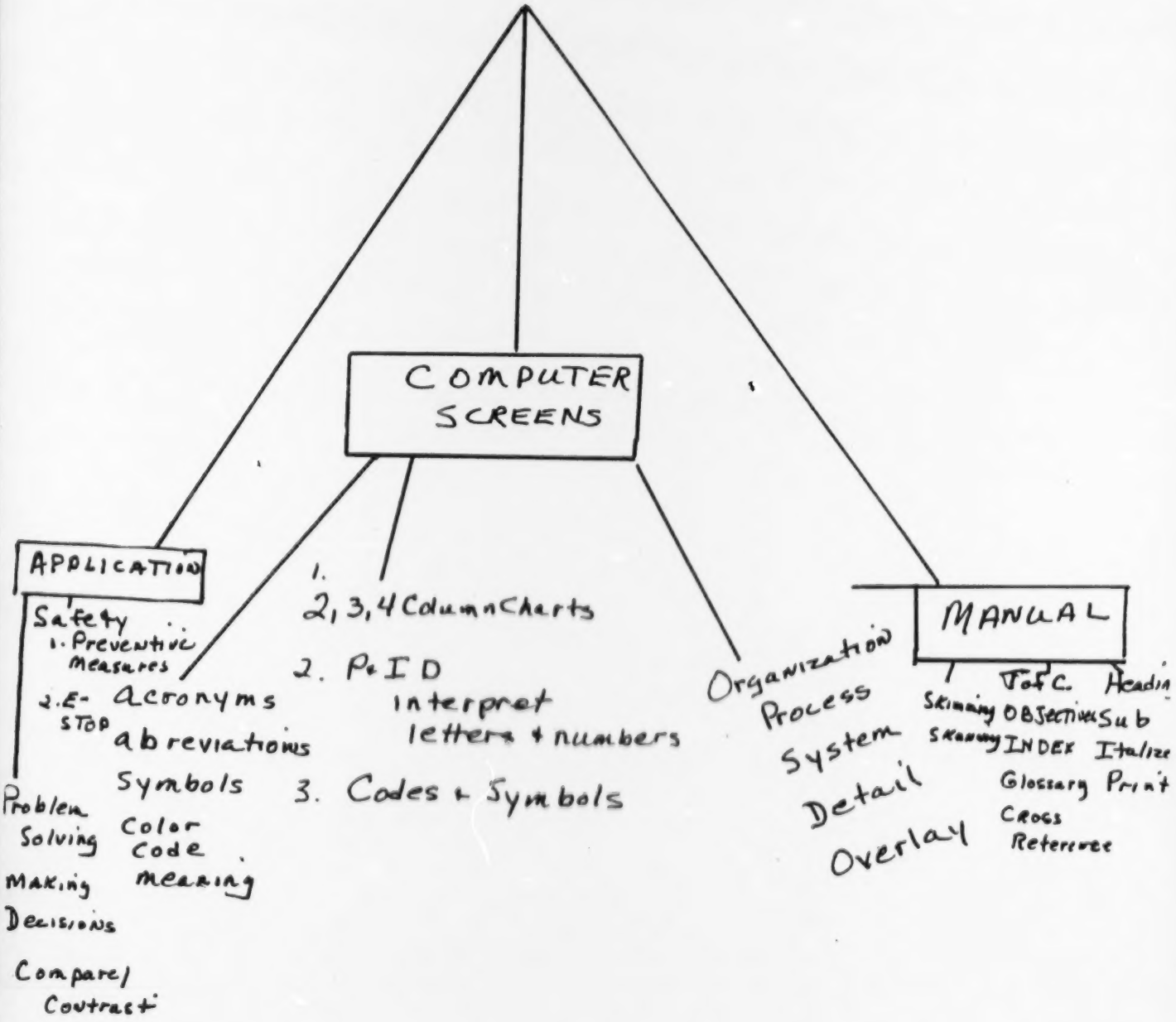
Directions: Change the following pounds to CWT (make smaller)

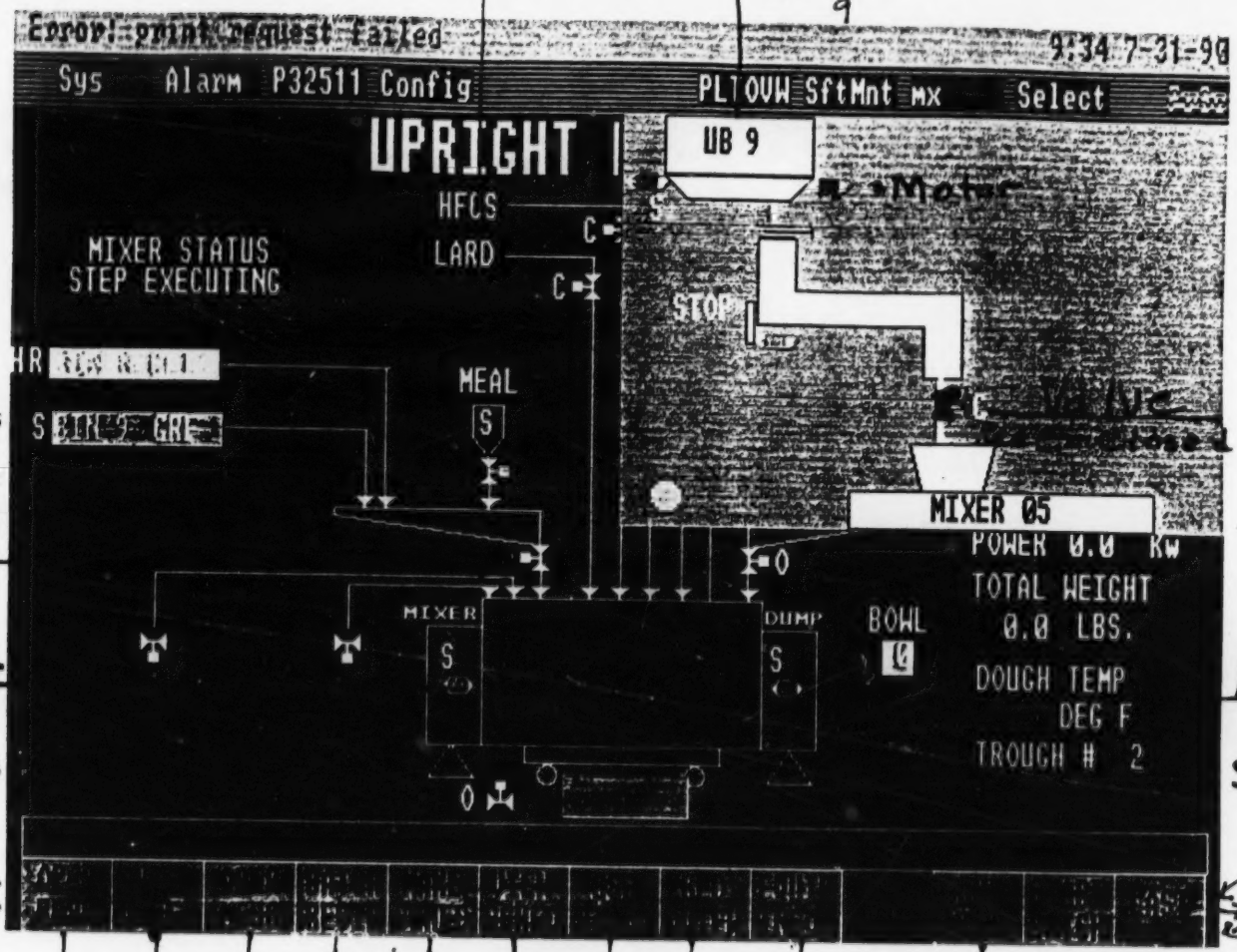
	Pounds	CWT
1.	500.25 Climax	_____
2.	32.5 Cal Carb	_____
3.	1780.0 Flour	_____
4.	11.5 Major Minor	_____
5.	161.6 Hand Add	_____

Directions: Change the following CWT to pounds (make bigger)

	CWT	Pounds
1.	4.218 Climax	_____
2.	10.50 Sponge	_____
3.	3.255 Sugar	_____
4.	7.265 Certified	_____
5.	.115 M/M	_____

Reading


COMPUTER SCREENS
APPLICATION
Safety
1. Preventive measures
2. E-STOP
Problem Solving
MAKing Decisions
Compare/ Contrast
acronyms
abreviations
Symbols
Color Code meaning
1.
2, 3, 4 Column Charts
2. P&ID
interpret letters & numbers
3. Codes & Symbols
MANUAL
Organization
Process
System
Detail
Overlay
Skimming
Scanning
T of C.
INDEX
Glossary
Cross Reference
Heading
OBJectives
Sub
Italize
Print



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3995 NCVOS 104

UPRIGHT MIXERS

1. What is the difference between run mode and step mode?

2. What is running in Mixers 5, 6, 7, and 8 and how many doughs have been made in them so far?

3. What runs are scheduled for Mixer 7?

4. Please show on the master run scheduler Upright Mixer 5 only.

5. What is the mixer status of Mixer 8?

6. How many minutes until the next shift for Mixer 7?

7. How many batches are scheduled for Mixer 5?

8. The HFCS valve for Mixer 5 is not working through the computer so the engineer needs you to open and close the valve a few times. Please do this for him.

9. What ingredient is in Use Bin 10 for Mixer 5?

10. Check when was the last time the screw conveyor for Use Bin 9 for Mixer 5 was worked on by M&R.

11. What is the equipment number for Mixer 5 meal receiver hopper bottom valve?

12. Start up Mixer 5 in automatic.

13. Once the batch has started, put the mixer into semi-auto. When will semi-auto take effect?

14. Go to the batch recipe. What step are you on?

15. What is the high limit on flour?

16. What will happen if you type in 3,100 pounds for a flour target?

17. During the mix cycle, you decide you need to add 15 pounds of water. Please do this--do not forget to mix it in.

18. After this dough, start the next batch in semi-auto run mode.

19. Once this batch starts, you decide that the doughs need to be made to 98°F. Please take care of this. What degree water will the system use to give you a 98°F batch?

20. Put the run back into auto and finish out the run.